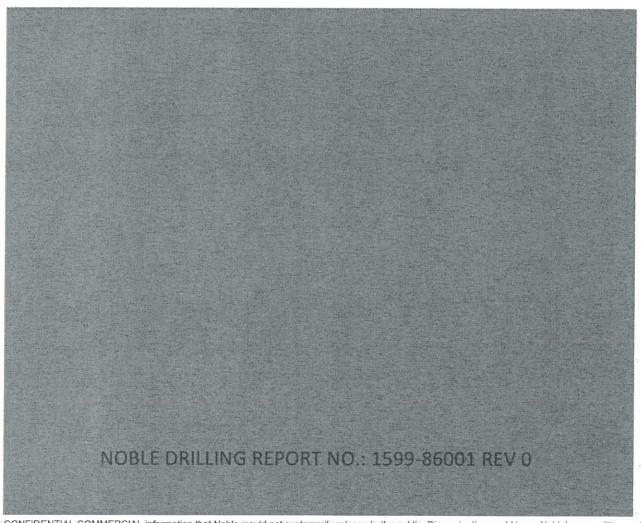


NOBLE DISCOVERER

DRAIN SYSTEM COLLECTION AND PROCESSING DESCRIPTION OF OPERATION



VESSEL: Noble Discoverer

LOCATION OF OPERATION: Chukchi Sea OCS, Alaska

The **Noble Discoverer** Drain System has been redesigned to provide full compliance with NPDES & VGP Permits. NPDES Permit No. AKG-28-8100 considers this system as a Number 002 Discharge (Deck Drainage Discharge). Please refer to the NPDES documentation for details related to processing and testing requirements of discharges.

ACRONYM DEFINITIONS

MEPC Marine Environment Protection Committee

NPDES National Pollutant Discharge Elimination System

OCM Oil Content Monitor/Oil Content Meter

OEM Original Equipment Manufacturer

OWS Oily Water Separator

SYSTEM DESCRIPTION

The System will collect all fluids and precipitation spilling onto the "weather area" decks and platforms. There are approximately 14 deck drains located along the Port and Starboardsides of the Vessel.

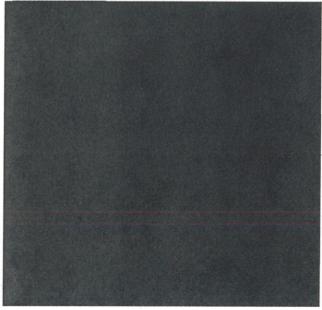
Drill floor drainage will be processed separately from the deck drains, and are routed directly to the Drill floor drains all combine into a single header which is routed through the for processing and discharge as described in section "DRILL FLOOR DRAIN FLUID HANDLING" below. Although the system is principally intended to be operated manually to comply with the sampling requirements of the NPDES Permit, the system can automate the process of determining whether fluid is clean or contaminated. The automated process combined with additional sheen and other testing will help optimize system performance, and reduce human factors. Protection of the environment is paramount.

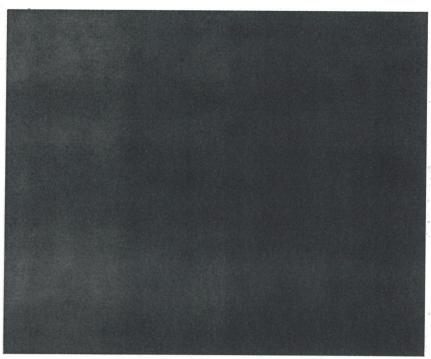
The two main areas of for the system are as follows;

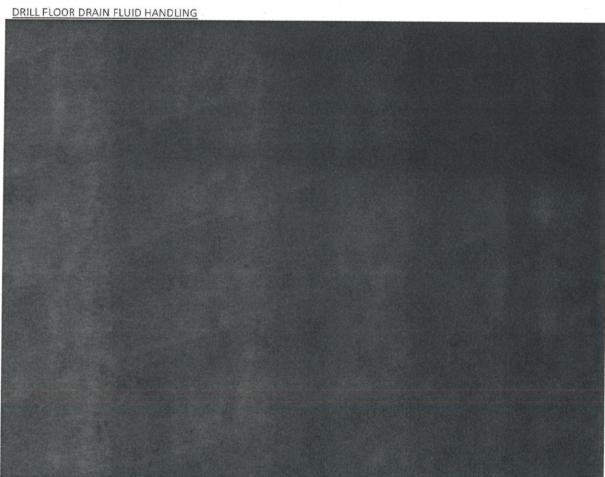
- (1) Weather Area Drill Floor Drainage
- (2) Weather Area Deck Drains (weather area platforms and walkways inclusive)

Additionally, there are drains in the Helideck area and Quarters area that are considered hydrocarbon free. These drains are routed overboard or to a separate collection tank. These drains will be monitored for sheen. Any sheen will be noted and reported as required.

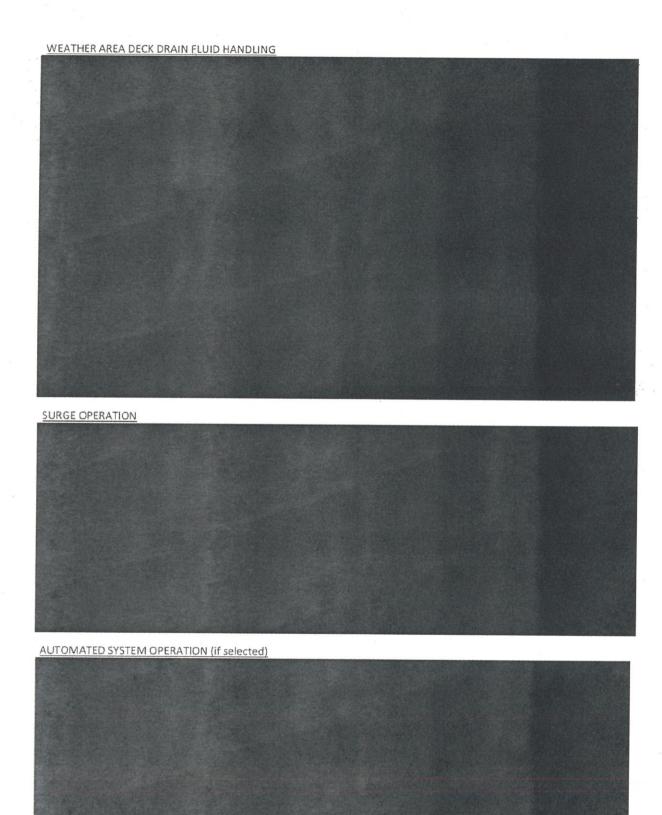
KEY COMPONENTS



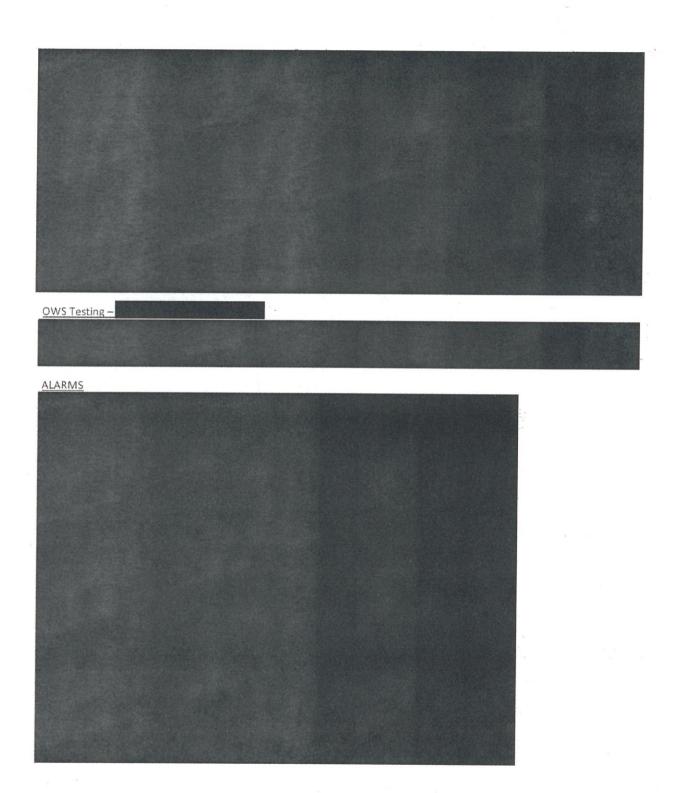




This is CONFIDENTIAL COMMERCIAL information that Noble would not customarily release to the public. Dissemination could harm Noble's competitive position. It is therefore DESIGNATED AS PROTECTED under Exemption 4 to the Freedom of Information Act, 5 USC 552(b)(4).



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COMPASS WATER SOLUTIONS

Service Call Report & Work Acknowledgement

Customer: Alexader Rya	n Marine	& Safe	ety	Vessel:	Noble Discoverer
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Operation Hours:	-			Control Voltage:	230
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In Arrival Condition:	Good	Fair	Poor	Software:	
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Operation and Service is the Manual Language. Are the proper Technic Does the crew understances the crew understances the crew understances the crew understances the crew understance.	e appropal service and how and how and how and how and the farm the farm appearature	oriate? e Bullet to oper to clear to perf to perf collowing	ins availa ate the u of the unit orm basic ormos impaction	nit? ? sunit troubleshooting? n environmental factors that is the membranes?	Yes X No Yes
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24726 Alexander Ryan Service Call Report.xlsx

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rvice Report	
24-Jun	
1. Travel to Washington	CARTICULAR AND METALOGICA CONTROL OF THE SECOND CONTROL OF THE SEC
2. I met with the Chief Engineer	We discussed my task.
3. I looked at the	because the Chief said the solenoids for Overboard and
Recirculation were not operating	g. The power to the solenoids only had one leg of the 220 V power
curry The wires for the Lilah C	8. The bower to the goletions only tight one led of the SSO A bowel
Supply, the whes for the right	Oil PPM Alarm and system shutdown were not hooked up.
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25-Jun	Michiga A Galaria in contilida in Astronomia de Antonio Astronomia
1. I looked at the two units in the	e air compressor room.
The wires for the High Oil PPM	Alarm and shutdown were not hooked up.
We tried to operate the	on the Engine Room OWS and it could not handle the
load of the Overboard and Recir	rculation Solenoid Valves. NAG installed a new monitor that did not work.
3. I reinstalled the	and Tested the system. It is operating correctly with
	working correctly. It has a current Verification Certificate.
Sand burgottos. The Michigan	wantig correctly, it has a correctly verification definicate.
26-Jun	1. The contract of the contrac
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1. 100ay we wired the High Oil F	PPM Alarm wires on both of the air compressor room OWS's.
2. They were tested and the sole	enoids work and the High Oil PPM Alarms were working.
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24726 Alexander Ryan Service Call Report.xisx

service@compasswater.com



Noble Drilling, Discoverer NAG Marine FSR 6-26-15

Fri, 06/26/2015 - 09:10 — - Noble Service Job Reference: Service Job - Discoverer - Install & Commission atv 3 — Noble - Service Info
Location: Everett, WA Onsite Ship Rep: Chief E NAG Service Technican: Dates of Service: Thu, 06/25/2015 - Fri, 06/26/2015
r-Job Information
Customer PO Number: 4700392366 Job Number: 5509-000
Initial Tasking Troubleshoot operation of Engine room OWS to operation.
-NAG-Actions / Recommendations
The following was noted:
- Wiring to the common lead for high ppm alarm was terminated to the wrong 220vac input. Once corrected the unit functioned correctly for two solenoid cycles and then the relay board stoped working in the
- Spare was installed and tested unsatisfactory due to it erroring out when the alarm status changed from maintenance to normal operation. A power spike was observed that would either reset the from maintenance to normal operation. A power spike was observed that would either reset the from maintenance to normal operation. The solenoid valves were tested and replaced with the same results.
Recommend the following:
- Using isolated output to control the solenoid operation so not to disrupt the operation of the Sending unit to NAG Marine for troubleshooting and repair.
NAG Manne Services Manager
Signature:

Herettasansk andraint/6702

1/

COMPASS WATER SOLUTIONS

Service Call Report & Work Acknowledgement

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24711 - NOBLE DISCOVERER (47540).xis

service@compasswater.com

Customer:	Alexander Ryan Ma	arine & Safety	1/		A CONTRACTOR AND ADDRESS OF THE PARTY OF THE
Andrews	P.O. Box		Vessel:	Noble Discoverer	***************************************
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-	THE PARTY OF THE P
-	Travel to Everett
-	18-May
	Machine with the grant of the second of the
	Meeting with the crew to discuss the scope of the work.
	OCD checked, verified in March 6th, 2015. The Verify Calib, Number was 0, all the detectors are OK. The OCD is in good condition.
	3. High all goatest ECS
	High oil content ECR alarm checked. The Alarm 2 delay is 0 seconds now. The crew was not getting the alarm because they were pushing down the plunger while the gustant was not getting.
	4. DV#IPODM coleans in a series was supposed
	S. Overboard - recipulation change testing to
	set 5 seconds.
	D. Molor values tested the 4 to 1
**********	7 The cleaning lenk had half as inch of each state.
	7. The cleaning tenk had half ar inch of sand at the bottom. I cleaned the tank but the seawater in the clean water supply is full of sand.
	8. Cleaning timers addisted Charging Interest Interest Interest
	Cleaning timers adjusted. Chemical Injection time reduced from 90 to 85 seconds. Circulation time extended from 1800 seconds to 2000 seconds.
	9. System leated for 1 hours. The
	other pressures were right and constant. The process filter differential pressure was 5 psi. The 10. One hour automatic spir-o-lator flush tested, the constant are spir-o-lator flush tested the constant are spir-o-lator flush tested.
	U. LIDE AND DIRECTOR AND A AREA AND
	normal pressures. The product beokpressure only recovered 2 psi (42 psi). 11. The crew decided to replace the membrane 2.
	to disconnect high pressure inlet and cutlet pipe, release the straps and push the membranes. I had 12. The membranes were very dirty. They were covered by oil studies and push the housings to one side.
	12. The membranes were very dirty. They were covered by oil studge and the high pressure inlet and outlet side were fouled by studge and debris.
	outlet side were fouled by studge and debris.
	13. MRCDCCCA havaires
	3. Wembrane housings alamad
	14. The spare mentiones upon activated.
	13. Membrane housings cleaned. 14. The spare membranes were not new, they were an old set of membranes not in good shape. We decided to take 4 membranes from one of the 10000 systems.
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	13. Membrane housings cleaned. 14. The spare membranes were not new, they were an old set of membranes not in good shape. We decided to take 4 membranes from one of the 10000 systems. 19-May 1. Went to the ship. The plan then was to wait for a new set of membranes that are coming from CA. 2. Replaced the prefiters bag filters. 3. Replaced the process bag filter.
	13. Membrane housings cleaned. 14. The spare membranes were not new, they were an old set of membranes not in good shape. We decided to take 4 membranes from one of the 10000 systems. 19-May 1. Went to the ship. The plan then was to wait for a new set of membranes that are coming from CA. 2. Replaced the prefiters bag filters. 3. Replaced the process bag filter.
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ervice Report	-
10. I replaced the 2 housings end places of	the side without product water connections, using the plates
of the 10,000 system. The ppm are out of	range apply and the event water connections, using the plates
11 O-rings of the adaptor parts of the other	r 2 housing plates replaced. The same result.
12. We tried to install the new memberses	# 2 ricusing plates replaced. The same result.
installed in the flow constitute (a column in the	, no problem with the two in the upper housing, which were
installed body and the cool (0-1995 if the	right position), but the lower housing membranes had to be
simply Baselian address side of the o-np	igs first) and there is no room to install them completely
acayric because or that I honden the o-rin	gs were not in the right position and we had to take them
out again. The o-rings were broken.	(
location.	ction port and took the lower housing out of the system
14. Once the housing was out Linstelled 2	new membranes (the o-rings of the other two were broken),
and mounted one of the housing and plates	a need partial and the oliginal two wells proken).
15 We not the complete beginning with the	a sensy new adaptors and o-engs.
16. The startum war converted again with the	membranes back to the unit and connected everything agein.
17 Me traditio OMD when the	anes, new adaptors, new interconectors and o-rings.
when the over the control when the overboard	d valve was open, the com were high (out of range) but
The CM/S	ecirculation valve opened the ppm drop again below 15 ppm.
THE CARS MOTERS IN THAT CASE OF HIGH	-low norms
18. I tested the OCD autlet looking for inter	ruptions in the flow but it was constant.
19, 440 full the system again with the nlund	Jef COWO (fanise dation) duenn a maded of these African
ATT PART TESTING Was U.U and it dign't get by	COST WORD the acarboned coins assumed
49. We run me system for about 25 minute	s, the differential pressure in the process filter use 12 not
United Engineer decided in ston and replace	the hog filter
 We run the system for other 10 minutes 	s. The ppm reading was 0.0 all the time. We tried the
Paradeld-lecitoniston custos it muckey	The state of the s
22. The backpressure droped 2 psi in that 2	25 minutes. The bilge water is contaminated with too much
oil and sludge.	The state of the s
The state of the s	WINNESS AND THE SANDERS THE THE PROPERTY OF TH
20-May	THE STATE OF THE S
The second street, and the second sec	Control of the contro
Stand-by in the hotel waiting for the Coast C	Suacti inspection to be made
at the control of the second o	Transferring to be illege.
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21-May	White the same transference of the same state of
The second section of the second section of the second section of the second section of the second s	THE RESIDENCE OF THE PROPERTY
1. The system passed the Coast Guard insp	CONTRACTOR AND
2. 10.000 OMS membranes installed bearing	JECHOT.
10,000 OWS membranes installed back in the stalled back in th	in the system 8 with the old o-rings.
A Min add-	A CONTRACT OF THE PROPERTY OF
of bleach (8.5% control of ble	centration) and cleaner to the cleaning tank and performed
""" "" " " " " " " " " " " " " " " " "	s not going to be used in more than two weeks. I would
	the same after a month (if it is not used)
with a gallon of bleach (no cleaner), and do	
With a gallon of bleach (no cleaner), and do	Company of the second s
with a gallon of bleach (no cleaner), and do 1 22-May	Comments and the comments of t
22-May	
22-May	
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22-May 1. Travel to California.	Acknowledgement: MONROVIA
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22-May 1. Travel to California.	Acknowledgement: MONROVIA

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Customer:	Alexander Ryan Merine & Safety			The second secon		
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	Houston, TX	P.O. #;			and Colonia	
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		Data:	May 17-21, 2015	2		
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Recor	Timendations:		S S S S S S S S S S S S S S S S S S S	
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1.The	level of oil and sludge in the bilge water is exc	esua would recommand to radio	S S S S S S S S S S S S S S S S S S S	
the	and lush and perform clear	ling cycles with a mixture of alkaling	e the umers of	
กนาก	er and bleach very often.	and the state of t	Condition (Delt	
reason A commence	The second state of the second	mental transfer of the second control of the second control of the second of the second control of the second	* CONTRACTOR AND	
2. Afte	er each use of the OWS, an flush and	a couple of flush should	be performed.	
ir ine :	Transferring to the second to the days a renow	Transport in morning a selection of the second	and the second section of the second	
			amination.	
L 01123	m the same process once a morati to renew th	e mixture.		
3 Tha	Citizen statement in the CSA	The representative process is considered as the constant of th	5 CO - CO	
fresh	clean water used in the OWS (seawater) is full vater to the system or filter that seawater.	of sand. I would recommend either	f to supply	
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	SECRET CONTROL CONTROL AND ADDRESS CONTROL CON	A STATE OF THE RESERVE OF THE STATE OF THE S		
4.1 100	Ommand too to install a 0-200 psi pressure ga	the same of the sa	CONT. AL SERVICE AND ADDRESS OF THE PARTY OF	
idea of	the differential pressure in the membranes an	uge in the process pump discharge	to have an	
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5. The	list of spares I recommend to have always on	Band is		
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20 x	10 micron Filter Bag -	A MANAGEMENT CONTRACTOR OF A SECURITION OF THE PROPERTY AND ADMINISTRATION OF THE PROPERTY OF	And the second service of the second	
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4 x	Membrane Element -	#Effective on some upon promote a property for their companies of promote and purely and a promote and the pro	Mark and an Arm 2 consideration of the Committee page	
4 x	Oil Sensing Probe -	The second of th	And the second of the second o	
4 X	Adaptor seal -		A STATE OF THE STA	
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Customer:	Alexander Ryan Marine & Safety	Vessel: Noble Discoverer	ne new (any
	P.O. Box 9363	P.O. #:	-
	Houston, TX	Job #: 24711	
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~		Date: May 17-21, 2015 Engineer:	
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		MONROVIA	
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24711 - NOBLE DISCOVERER (47540).xls

service@compasswater.com

P.O. Box 9363 Houston, TX P.O. # Job #: 24711 Date: May 17-21, 2015 Engineer: May 17-21, 2015 Engineer: May 17-21, 2015 Engineer: May 17-21, 2015 Engineer: May 17-21, 2015 Engineer: May 17-21, 2015 Engineer: May 17-21, 2015 The purpose of this document is to ensure that both parties (Compass Water Solutions Inc. and the Uncurrence is working properly. This document constitutes acceptance of the equipment by the "Customer". Any and all outstanding less as defined on the OIT (Outstanding lesses Tracking) sheet, if any, have been completed by the Service Engineer to the satisfaction of both parties Outstanding Issues Tracking 1 2 3 4 5 5 6 7 8 9 9 10 11 12 13 14 15 Exported By: Acknowledgement: NOSE DISCOVER MONROVIA Customer Representative 600060 GRT: 14021 NRT: 42151	Customer:	Alexander Ryan Marine & Safety		
Houston, TX Job #: 24711 Date: May 17-21, 2015 Engineer: May 17-21, 2015 Service Acceptance Agreement The purpose of this document is to ensure that both parties (Compass Water Solutions Inc. and the "Customer") are in agreement that the equipment serviced by Compass Water Solutions Inc. at the time service is working properly. This document constitutes acceptance of the equipment by the "Customer". Any and all outstanding less as defined on the OIT (Outstanding Issues Tracking) sheet, if any, have been completed by the Service Engineer to the satisfaction of both parties Outstanding Issues Tracking Sat Uns. Outstanding Issues Tracking Sat Uns. Customer Representative Bother GRT: 14051 NRI: 42151		P D Box 9363		Noble Discoverer -
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Customer Representative: 050000 GRT: 14051 NRT: 4218 HP: 8590	***************************************			
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GRT: 14051 NRT: 4216 HP: 8690			Customer	Representative: 0000008
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service@compassw	mpasswater.com	24711 - NOBLE DISI	COVERER (47540),xis	NRT: 4218



14.Commissioning Procedures

	MECHANICAL COMPLETION & INSTALLATION						
		LATION					
	MODULE NO :	EQUIP. SER NO:					
-	MANUFACTURER:	SERVICE PURPOSE : RIG FLO	or di	WIAS	5		
	(REFER TO OPERATORS MANUAL)	TYPE:					
-	MECHANICAL COMPLETION				FERNING		
	1) Check all air, fluid and electrical connection ensure they are all properly fastened and selective they are all properly fastened and selective they are all properly fastened and selective they are all properly and work hose before hooking up to system. 4) Verify the drain system is not hard piped to a many is present. INSTEC. 5) Set air pressure regulator up to 6.8 bar (100 for the stall air diaphragm pumps using the main plant in the DPLS switch by raising in high-high red light using a stiff wire or rod to form the stall high level (2) and all low level verify contingency options for worse-case some review termination points and hose-routes if if dense phase will be maniltored, the use Function test this retro-fit sub-system and red Verify an inline cleanout/strainer is in place in MPC. 13) NOTE: This document is to be filled out C following have been reviewed, understand the stall up procedures.	they aligned when full (1.42 metric tens per m²) well protected (air & water) and blow the MPC and that a small air gap (50 metric) and the MPC and that a small air gap (50 metric) are the foliated to engage pump and the manipulate float handles el (2) switches renerios or all 3 x weste streams of the stroke counter is necessary, set counter (2.99 lps) in drains systems upstream of the DNLY AFTER the rig survey and the stood and discussed with the	YES V V V V V V V V V V V V V	No	Company of the Compan		
8	REMARKS OLW MODITOR INTER SYSTEM	SHAT SO INTO THE		······································			
WK Water Control					WASHINGTON THE		
1	MESWACO COMMISSIONING ENGINEER:	SM/CLIENT REP:		Character de la constant			
					Tather to		
4.	DATE: 5	SIGN		commence	1		

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		The state of the s		-
ONBOARD	RAINING COMPLETION CHECK LIS	ľ		
MODULE NO :	EQUIP. SER NO :			
MANUFACTURE:	SERVICE PURPOSE: RIG	FLOO	r Dr.	AINS

TRAINING		YES	NO	
during the weekly safety me	letermined to be ready for operations, it is basic presentation of the to the rig crew eting. If not available for the meeting then a re DSM, OIM, Barge Master & Mud Engineer	-		
2 Discuss with the Otta which responsible for the open the principles/design/expectat	2 x rig personnel (opposite shifts) will be	1		
his active system (suggested if Make sure the DSM & the Mile	oute is over any shaker screen)			
7\ Do returning previously thrown	away whole mud back to their active system			
* NO MUD ENGINE	en oudoard		-	
				Control of Chicago
MI-SWACO COMMISSIONING ENGIN	EER; DSM/CLIENT REP			_
SIGN: DATE			,	200000000000000000000000000000000000000
SIGN: DATE:	SIGN: DATE	*	***************************************	
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				potentia
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				Conspictor

[63]



PROJECT: DESCRIPTION:		S	LOCATION:		
CONTRACT: CLIENT:		-	DATE 20 10 4		
	REVISION	*	The state of the s		
SYSTEM DESCRIPTION:	***************************************	······································			
MPC FOR DRILL FL	a soc	RAINS	**************************************		
25 A 17 A 17 A 19 A 19 A 19 A 19 A 19 A 19	The state of the s	YES	No		
PROJECT VERIFICATION		1	***************************************		
PIPING COMPLETION		-	Marie 1900 100 100 100 100 100 100 100 100 10		
INSTALLATION COMPLETION	***************************************				
MECHANICAL COMPLETION	***************************************				
ELECTRICAL COMPLETION		- Lumi			
COMMISSIONING ACCEPTANCE		~ '			
INSTALLATION & COMMISSIONING CLIENT ACG	EPTANCE				
M-I SWACO REPRESENTITIVE. CLIENT REPRESENTITIVE.					
DATE: 30 10 14	DATE:	mercanical summer and a summer a			
NAME	NAME:				
PROJECT: DESCRIPTION:	in a second	L	OCATION:		
CONTRACT: CLIENT:					
SYSTEM NO : REVISION :		L	PATE:		
SYSTEM DESCRIPTION:					
PROJECT VERIFICATION		YES	NO		
#\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					

[64]



Service Job - Discoverer - Install & Commission qty 3 Mon, 06/15/2015 - 09:48 —

Service Job Reference: Service Job - Discoverer - Install & Commission atv 3 - Noble Service Info
Location: Seattle Wa Onsite Ship Rep:
NAG Service Technican: Dates of Service: Tue, 06/09/2015 - Fri, 06/12/2015
r-Job Information
Customer PO Number: 4700392366 Job Number: 5509-000
- Initial Tasking
Install & Commission qty 3
- NAG Actions / Recommendations
Installed to disconnected existing OCM, associated wiring, disconnected and blanked off water wash piping, installed new brackets to mount Connected to OWS controll cabinet using new Quick Disconnects/Cable. Performed operation test as per Inspection and Commissioning Procrdures. Product flow was within standards, 1 gal per min, High PPM alarm sounded and overboard valve cycled to recirc position when maintaince handle was operated. Conducted training with crewmembers on operation and cleaning of OCM
Installed to disconnected existing OCM, associated wiring, disconnected and blanked off water wash piping, installed new brackets to mount cabinet using existing cabling. Performed operation test as per Inspection and Commissioning Procedures. Product flow was within standards, 1 gal per min, High PPM alarm sounded and overboard valve cycled to recirc position when maintaince handle was operated. Conducted training with crewmembers on operation and cleaning of OCM
Installed to disconnected existing OCM, associated wiring, disconnected and blanked off water wash piping, installed new brackets to mount cabinet using existing cabling. Performed operation test as per Inspection and Commissioning Procedures. Product flow was within standards, 1 gal per min, High PPM alarm sounded and overboard valve cycled to recirc position when maintaince handle was operated. Conducted training with crewmembers on operation and cleaning of OCM





Rev. 1.0-06 Feb 2012

Ship: NoBel	Discorie La	ocation: Seattle WA	Date:	10-11-15	
OWS s/n:		NAG Marine Service Engineer	THE COURT OF THE PROPERTY OF T	's Force Represen	itative
OCM s/n:					- The state of the
		· ·	· · · · · · · · · · · · · · · · · · ·		

Software	Readings	Corrective Action / Notes
Date and Time Set to GMT	(Yes) No	The second secon
Verify maintenance mode activation	(Sat) UnSat	
Relay Operation Check	(Sat / UnSat	KARABAN PROPERTIES (KARABAN PERTENCE) (KARABAN PERTENCE P
Backup Battery Voltage	VDC	
Data Download Test	(Sat)/ UnSat	
Last Calibration Date	2-20-15	
Note: Calibration is good for Two (2) years but not to exceed (36) months from manuf	s from commissioning	
Preventative Maintenance	Readings	Corrective Action / Notes
Check Desiccant Plug	Sat / UnSat	The second secon
Clean cell Operations Manual (9.2.2)	Sat / UnSat	
Check calibration Operations Manual (9.2.3) Solution PPM:30	PPM	
Note:		
Clean Water Check	Readings	Corrective Action / Notes
RAW	102	
FS %	,017 %	
FL	.023 V	
REF	1.122 V	
REFCAL	1.179 V	
PPM	O PPM	•
Cell %	100 %	
Мах Тетр	12.5 °C	
High Std	8.486	
Low Std	0.015	
Note:	**************************************	

Signatures:				At a second
Technician	**************************************	Ship Representative:	C/E	The result of Month allowance group on the following support

Page 1 of 1





Rev. 1.0-06 Feb 2012

Ship: NoBU DISCOTER	Location: SSATTIS WA	Date: 6-12-15
OWS s/n:	NAG Marine Service Engineer	Ship's Force Representative
OCM s/n:		

Software	Readings	Corrective Action / Notes
Date and Time Set to GMT	(Yes) No	The state of the s
Verify maintenance mode activation	(Sat) UnSat	
Relay Operation Check	⊘at UnSat	
Backup Battery Voltage	VDC	
Data Download Test	<u>Sat</u> DUnSat	
Last Calibration Date	2 20 -15	CALIBRATION DATE GOOD FOR 2 YEARS FROM COMMISSIONING DATE
Note: Calibration is good for Two (2) year but not to exceed (36) months from manuf		
Preventative Maintenance	Readings	Corrective Action / Notes
Check Desiccant Plug	(Sab/ UnSat	A CONTRACTOR OF THE CONTRACTOR
Clean cell Operations Manual (9.2.2)	Sat / UnSat	
Check calibration Operations Manual (9.2.3) Solution PPM:30	. 27.a PPM	
Note:		
Clean Water Check	Readings	Corrective Action / Notes
RAW	,06	
F5 %	1052 %	
FL	1064 V	
REF	1,151 V	
REFCAL	1,136 V 0 PPM	
PPM	O' PPM	
Cell %	100 %	
Max Temp	21.6 °C	
High Std	8.238	
Low Std	1010 POIC	
Vote:		

Technician: Ship Representative:





Rev. 1.0-05 Feb 2012

Ship: NoBel Discour	Location: STATIL WA	Date: 6-12-15
OWS s/n:	NAG Marine Service Engineer	Ship's Force Representative
OCM s/n:		in the second se

Software	Readings	Corrective Action / Notes
Date and Time Set to GMT	(Yes) No	The second secon
Verify maintenance mode activation	Sab/ UnSat	
Relay Operation Check	Sal / UnSat	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Backup Battery Voltage	VDC	
Data Download Test	(Sat) UnSat	
Last Calibration Date	2-20-15	
Note: Calibration is good for Two (2) yea but not to exceed (36) months from manu	rs from commissioning	
Preventative Maintenance	Readings	Corrective Action / Notes
Check Desiccant Plug	(Sat) UnSat	ALCO TO THE TOTAL PROPERTY OF THE TOTAL PROP
Clean cell Operations Manual (9.2.2)	Sat/ UnSat	
Check calibration Operations Manual (9.2.3) Solution PPM: 30	25.5 PPM	
Note:		
Clean Water Check	Readings	Corrective Action / Notes
RAW	,14	
F5 %	1125 %	
FL CAPPINS 160	ILST V	
REF	1.057 V	
REFCAL	1.050 V	
PPM	12 PPM	
Cell %	100 %	
Max Temp	23.3 °C	
High Std	6.947	
Low Std	0.024	
Note:	·	
ef: Service Manual (4.0-4.4) Operations Manual (9.0-9	1. 9.2-9.2 31	

Signatures:			
Technicia	Ship Representative		
		-	

Page 1 of 1

Approved

Approval Date: Approved By:

06/11/2015 13:08

WIM Report:

OILY WATER SEPARATOR-OPERATION- ENGINE ROOM NOI-WIM-ENG-8001

NDOR Codes: 0

Report Generated: 06/11/2015

Title:

OILY WATER SEPARATOR- OPERATION- ENGINE

	ROOM			. Operator: Shell Alac Location: Ocean Tr	
Req	uired Personnel:				
Posit	on	Quantity	Position	and the second of the second of the second	Quantity
Engin	66 <i>I</i>	1		April	winning
Requ	Lired Permits:	***************************************			***************************************
Cold	Work				
Requ	uired Tools and Equipment:				
Name		Quantity	Name		Quantity
Oil Re	cord book	1		With the second	
Prep	arations:				
Step	Note	and the state of t	a compression of the contract of		
2	Conduct a pre-job safety meeting Review the procedure and the JS Assign responsibilities as to the c Ensure crew members understar Make sure crew members are clee Follow policies No short cuts	SA. Controls required on of their duties and i	the JSA (Noted on esponsibilities.		That is a second of the second
	Wear the proper PPE Make sure crew members are awand to Stop the Job for the same needs to stop the same of the same	rare of their obligati easons.	on to inform superv	isor when something does	not go or look right
3	Bilge water holding tank and waste	oil tank need to be	sounded		
4	FAILURE TO COMPLY WITH THIS CAN RESULT IN TERMINATION, I TRICKING SENSORS AND HOT-W OPERATE THE OILY WATER SEP	PROCEDURE OF FINES AND POSSI VIRING SOLENOIR	RANY ATTEMPT TO	ACTION THAT SALES IN THE PROPERTY OF THE	EATTER SATE AND HOST OF HE

Report Generated: 85/11/2015 13:08

JPS Release Number: 4.3.65.3

NOI-WIM-ENG-0001

Page 1 of 2 JPS Release Date: 04/30/2015

Step	cedures:		
	Note		
1	Ensure that the following valves are closed: o Drain valves on all vessels o Bilge oily water feed valve o Overboard discharge valve o Oil test cock o Oil dump valve		
2	Ensure that the following valves are open: o Clean water inlet valve open o Return to Bilge Service Valve o Waste oil tank valve		
3	Prime the pump with clean sea water.		-1
4	Start the system using clean sea water. The system must be filled with clean sea water or the clean areas of the will be contaminated with oily water.	e system	
5	When water comes out of the sampling valve in the second vessel the two stages have been filled.		
6	Ensure that the system is running at 20 psi. If not adjust the pressure relief / water valve.		
7	Check to see that the power is on to the monitor.		
8	Close the clean water inlet valve to and open the bilge oily water inlet valve and valve to bilge water holding tan	k.	
9	If the pressure exceeds 40 psi then replace the coalescer cartridge and media in the second stage.		
10	Weekly Check the operation of the first stage oil discharge valve, by pressing the manual relay test (override) button in a discharge control probe head. If valve fails to operate do not use the unit until the problem has been fixed. Check the gland packing stuffing box on the separator feed pump and adjust as necessary to avoid air priming, packing when stuffing box contacts the gland housing.		
11	Every Six Months Check the operation of the pressure relief valve by partially closing the overboard discharge. Clean the air elimi	nator.	
12	Annually Drain both stages and remove top covers and all valves. Thoroughly wash through the separator vessels using and clean all valves. Reassemble with new coalescer cartridges and joints installed. Reset pressure relief / war	hot water er valve.	
13	Three to Five Years All of the above and remove and replace first stage-coalescer pack.		
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Approval Date: 07/1 Approved By:	4/2015 18:14	SIAKI- UP A	20 (02)(2)(01)		NDOR Cod	
Афризина бу.			RATION		- Report Generali	ed: 07/14/2015
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Required Tools and E	quipment:			A. SETA, PARALISSISSISSISSISSISSISSISSISSISSISSISSISS	A MANAGEMENT ASSESSMENT OF THE PARTY OF THE	
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Multi Phase Clarifier (slet co	ntained equipment)	1	CWS #1	erani-monyonenni	aparitania ilinini il funo	1 .
CWS IQ		1		Manager Parameters	***************************************	00134-V73-V4.01.0000.xxxxxxx
Check the follows Check pre sprimary strainer or is the secondary uphysical placemer offine and disassistrainer is primary allow cleaning of flow backward, up flow backward	or tank levels in systrainer alignment ar nit. Check valve line init and should only it of strainers - in or embled. This prever unit, and when it no unitary. Note: along	nem to establish and condition. The sup to ensure de the used when order to alean the list the processir eeds cleaning, a jed strainer may use overhead dr	r manual file path unk reference level onor to ere are two conical struck ck drain water passes pleaning the primary un ail / secondary straine; and file secondary straine; a causa deck drain syst wans and onto centrifu.	o processing ainers and ho through prim iit. This confie is, the fwd / p e while both s brought onli em to back u ge and transfi	usings. The fed ary strainer. The juration must be rimary strainer in strainers are disa he for brief pendip and allow deck er decks.	aft strainer uni followed due to ust be taken ssembled. Fwo d of time to
				system functi Dienstra	onality Levateni unictor	ality
Also check air sup pumps.	ply valves to	vater, free oil, so	old pump, and ship pu	mp room dec	k drain holding to	ank transfer
	erify failsafe closed outor panel correcti	operation of thre		Verify that to	ive he local indicator when discharging	
 Test high level ala and after an apprendiction opening. 	ximately 10 second		ould sound locally with d alarm should activat			audible siren, em in the
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WMM Report:

NDI-WIM-MNE-0055

Approved

Prep	arations:
Step	Fore
8	Reference 92R Fluid Transfer Procedure and Fluid Transfer checklist, located at file path
Proc	edires:
Step	NOTE:
4.0	Ensure JSA, WiM, and Fluid Transfer Checklist are in place for start up and continuous operation of Notify ECC prior to starting system or any overboard discharge. A new JSB, MMM, and Fluid Transfer Checklist shall be completed once per tous, at a minimum of twice per 24 hour period while six in continuous operation. The Chief Mate will be PIC for operation, and may delegate oversight of operation to the watch officer mate. Driller shall coordinate with watch officer mate to ensure proper lineup of LP mud system distribution box and to ensure ng floor deck drains remain free of trash and excessive mud, hydrocarbons, pilkwaller emulsions, and free oils.
2	System Operation Overview: The trockstes Drill Floor area drains into three streams:
	it is assumed drainage from these areas does not contrain draining fluids. These fluids can be sent to the deck drain system oily water separators independently. Drainage transfer pump, although they can also be sent to the deck drain system oily water separators independently. Drainage transfer pump, although they are also be solded to the property of the system of veirs, where particulates precipitate out to the system of veirs, where particulates precipitate out to the property of the system of veirs, where particulates precipitate out to the property of the system of veirs, where particulates precipitate out to the property of the system of veirs, where particulates precipitate out to the property of the system of veirs, where particulates precipitate out to the property of the system of veirs, where particulates precipitate out to the veirs, where particulates precipitates out to the veirs, where particulates precipitate out to the veirs, where particulates are particulated on the veirs, where particulates are particulated on the veirs, where particulates are particulated on the veirs, where particulates are particulated or the veirs, where particulated or the vei
3	Solact manual contration in order to function text the water pump reg oil gump, boild pump, Once pumps are verified as operations select automatic operation by selecting "solenoid" on pump selector switches for and "auto" for holding tank transfer pumps.
4	With automatic operating mode, monitor discharge of clean water, solids, and diverge. Monitor transfar pumps. Monitor following tank levels: surge tank, skudge tank underflow tank.
Š	Monitor three way valve indicator panel to determine if clean water from discharge has an oil content of greater than 15PPM and is being discharged overboard.
8 .	Clean pre-strainers as required by operational conditions. Change strainer finesp to aciate primary (five strainer) and bring secondary (aff) strainer online. Remove primary strainer from basket, clean, ceturn to service condition, and change strainer fineup to primary ordine, secondary secured.
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This is CONFIDENTIAL COMMERCIAL information that Noble would not customarily release to the public. Dissemination could harm Noble's competitive position. It is therefore DESIGNATED AS PROTECTED under Exemption 4 to the Freedom of Information Act, 5 USC 552(b)(4).

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	wal Date. wed By:	07/15/2016 21:01	Quera ti on of	Dek uni ts	Deirage	CAS		NDOR Coo		07/14/2015
Tiller		Operation of Deck On	ainage OWS units				4.	Discoverer		***************************************
								Shell Alaska Seattle - WA		
Regu	uired Pe	rsonnelt			w-5/5w-25.110-2005.110-			***************************************		
Positi	on		Quantity	Po	sition				Qui	intity
Cheif	Mate			Ma	ta		and the second	Common de mariane	1	Azamic men
Requ	uired Too	ois and Equipment.	V	.,				Commence of the contract of th	·	***************************************
Name			Quantity	Na	me				Que	intity
OWS:	#1 			OW	/S #2				1	mej mar står
Pyap	arations						A.W	**************************************		
Step	Note				***********	Am Ad				
	Ensure operation	JSA, WIM, and Fluids T og the system for sampli	ransfer Checklist are ng requirements acc	in place ording to	e prior to slar o NPDES pe	rtup. Ni rmit nu	otify M=18 mber AKC	WAGO Compile 5-26-8109	nce	pnor to
2		existing fluid levels in in reference prior to proc	essing.	ane	f head press	ure in i	Feed Line	(located adjace	nt to	ows
3	Reteren	ne POR Fluid Transfer P	antara (new hores) (ne	ronster	onecalist lo	cated (it file path			

JPS Release Number: 4.3.65.3

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NOI-WAI-MNE-0056

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Proc	cedures:	
Step	Rote	the first consistency of the property of the p
400	Reference OWS manual	on share drive path
*	Ensure the following valves are CPEN (See Appendix a. Process Filler Vent Valve b. Processed Water Sample Valve	C for the location of referenced valvies)
3	Ensure the following valves are CLOSED: (See Appen a. Biter Drain Value b. Drain Valve c. Vent Valve d. COD Sample to Drain Curterified Pump Discharge Sample v. Feed Sample Valve	
4	Return to ship's Pump Room, line up valves between head pressure to OWS Faad Line.	tanks, and turn on Feed Purné to supply
5	After Pre-Start checks are performed and the Initial Sta	rt-Up has been completed (See manual referenced above)
6	Go through the following routine startup procedure (Sec. a. Place Power Switch into the ON position b. Reset alarms if necessary. Press the START pushbutton to begin processing d. Once processing is completed, press the STOP picture. If the start is shull down.	

Vo D	Data:	

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LIQUID TRANSFER

All liquid transfers from the rig/ship to supply vessel will be managed by following the facility specific Fuel Oil Transfer Procedure.

Because of the sensitivity of these transfers, a certified fuel hose will be used and will be replaced on an annual basis as a more efficient alternative of the required re-hydro date requirements currently set up for fuel hoses.

SAMPLING

All sampling will require a sampling access point for each discharge to ensure accurate sampling of pH levels as well as any other parameters dictated by the NPDES General Permit AKG 28-8100. Addendum

DISCHARGES

Discharge 001: Drilling Fluids & Cuttings

During the drilling of the tophole, muds and cuttings will be discharged and deposited at the seafloor.

After the tophole is completed, drilling is advanced through the BOP stack and marine riser. Water-based drilling fluids and drill-cuttings are transported up the riser to the drilling unit. There the drill-cuttings are separated from the water-based drilling fluids by solids control equipment.

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The separated solids (drill-cuttings) are discharged into the sea and the reclaimed water-based drilling fluid is used to continue the drilling process.

After prolonged drilling, the water-based drilling fluid properties degrade through exposure to temperatures and pressures in the well and by dilution with water and clay-sized cuttings particles. At that point, a portion of the water-based drilling fluid may be discharged to allow for water-based drilling fluid reformulation. At the end of the drilling operations, water-based drilling fluids may be discharged in bulk.

Discharge 002: Deck Drainage

Deck drainage is the wastewater associated with washing platforms, decks, and equipment, and runoff from curbs, gutters, pans and wash areas from the deck of the drillship or drilling rig. Permit No.: AKG-28-8100 requires deck drainage systems to separate drains associated with oil and grease wastewater from wastewater not in contact with surfaces containing any oil or grease. The wastewater associated with oil and grease drains is processed through an oil-water separator prior to discharge into the Chukchi Sea. The effluent discharged through the oil-water separator will be tested four times during the drilling of the well using the initial toxicity testing screening method described in the QAPP. The salinity of the discharge will be measured and, if necessary, adjusted with brine solutions or artificial sea salts to testing conditions suitable for marine organisms.

Discharge 003: Sanitary Wastes

Sanitary waster is captured and processed by Marine Sanitation Device (MSD) effluent is discharged overboard or bunkered for storage. MSD will be inspected by a third party competent person annually with valid certificate of inspection retained by Person In Charge (PIC).

Discharge 004: Domestic Waste

Domestic waste is normally discharged overboard under MARPOL regulations. We have the option to bunker domestic waste when more stringent regulations apply. Fluids can be diverted through MSD and into holding tanks.

Discharge 005: Desalination

Effluent discharges associated with the creation of fresh water from seawater are likely to be high concentration brines similar to seawater in chemical composition but with higher concentrations of anions and cations. The potential high saline conditions of this discharge type may require a reduction of salinity to conditions that are conducive to the tolerant range of test organisms for both initial toxicity testing screen and the WET test

Discharge 006: Blowout Preventer Fluid (BOP)

BOP fluid is a mixture made by an automated process onboard the *Noble Discoverer* following manufacturer's recommendation of approximately 60% water, 38% glycol and 2% Erifon HD603HP. Noble is responsible for monitoring and recording tank volumes involved in the process of mixing BOP fluid. Visual inspection of the receiving water, near the location of the BOP will be completed during each test. Function test volumes and observations will be recorded.

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Discharge 007: Boiler Blowdown

The materials inside the boiler drums, including water and solids, are discharged periodically to minimize solids buildup in the boiler units. It is likely this discharge will be fresh water and contain some amount of solid materials. If necessary, the fresh water will be adjusted with brine solutions or artificial sea salts to salinity conditions conducive to test organism survival using the guidance provided in the EPA-approved methods for both initial toxicity testing screen and the WET test.

Discharge 008: Fire Control System Test Water

This discharge is created from seawater released during fire training exercises, and testing and maintenance of fire protection equipment. If necessary, the salinity of the fire control system test water will be adjusted to within testing parameters prior to the addition of test organisms. If water lands on deck, it must be captured within deck drainage system.

Discharge 009: Non-contact Cooling Water

Non-contact cooling water is uncontaminated, heated seawater created when cold seawater is used to cool machinery on the drill rig. It represents the highest volume of discharge authorized under Permit No.: AKG-28-8100. If necessary, the salinity of the non-contact cooling water will be adjusted to within testing parameters prior to the addition of test organisms.

Discharge 010: Uncontaminated Ballast Water

Will not be discharged at all while on location. During operations, equipment and supplies will be loaded, unloaded or moved around the vessel, which changes the overall stability of the vessel. In order to maintain safe operating conditions and to ensure proper stability of the vessel, seawater is constantly moved in and out of ballast tanks that are located throughout the entire vessel.

Discharge 011: Bilge Water

Blige water drains into the drilling vessel hull and is processed through an oil-water separator. Aquatic organisms may exist in the blige water discharge. Samples will be visually inspected using a light table to determine if organisms are present in the effluent. If organisms are observed, the effluent will be passed through a NytexTM screen large enough to capture the organisms prior to the start of any testing.

Discharge 012: Excess Cement Slurry

Will conduct a visual observation of the discharge during daylight hours. If discharge occurs during low light or low visibility, a static sheen test will be performed. Halliburton Cement Operator will provide the total chemical and cement volumes to compliance to be recorded.

Discharge 013: Muds, Cuttings, and Cement at the Seafloor

During the drilling of the tophole, muds and cuttings will be discharged and deposited at the seafloor. During cementing of casing strings, muds and cement from the tophole portion will be deposited on the seafloor and/or on the bottom of the MLC.

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RECORDKEEPING

The documentation required within this manual will be located with PIC and / or designee. Sampling logs for each applicable discharge, equipment certifications, and SDS for all chemicals added to equipment associated with the discharge stream.

ADDITIONAL INFORMATION

NEPDES permit # AKG-28-8100

Burger V_NOI

Discharge Specific Local Work Instructions Quality Assurance Project Plan (QAPP) Best Management Plan (BMP)

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Annual precipitation: Based on National Data for Weather and Buoy Center

RIG: Noble Discoverer **Drilling Floor Drains**

Date 10/3/12013

Subject: Alaska Precipitation Northern/western Coastal region of Alaska and Outer continental shelf, Chukchi Sea

Area in reference:

Barter Island

Barrow lat. 71.29, long. -156.78

Colville lat. 70.23, long -151.63

Wainwright lat. 70.63, long. -160.03

Prudhoe Bay lat. 70.25, long.-148.33

Point Hope

lat. 68.34, long -166.80

see table 1 for precipitation

Point lay

lat. 69.09, long -163.62 see table 1 for Precipitation

ALASKA NORTHERN COASTAL REGION CHUKCHI SEA

Precipitation, unit inches

		11101100	11 1501 1500		,		
		Highes	t daily	Highe	st yearly		
		to	otal	t	otal		
Selected Weather station	Period	date	amount	Year	amount		
Barter, AK	1949-1988	Jan-62	2.25	1954	15.8		
		Sep-54	2.4	1962	9.79		
		Oct-71	1.64	1967	9.53		
Prudhoe Bay, AK	1968-1999	Jan-97	0.6	1989	1.79		
		Jun-87	0.56	1996	1.68		
		Feb-89	0.42	1991	1.58		
Borrow, AK	1915-2013	Jul-87	1.28	1963	9.61		
		Jul-89	1.03	1925	7.16		
		Oct-26	1	1989	7.07		
Colville, AK	1996-2013	Jul-02	0.71	2011	4.48		
		Jul-00	0.65	2000	4.37		
Wainwright, AK	1942-2013	Aug-05	0.74	N/A	N/A		
		Aug-09	0.61	N/A	N/A		
		Jun-05	0.57	N/A	N/A		

The table indicates the worst Rainfall in one day (24 HR) and the highest in one year between those periods.

Discoverer drill floor anticipating rainfall per hour

- Used the Highest total individual day 2.25 inches recorded in 1965
- · Yearly rainfall not used
- rearry raintain not use

Using the highest recorded <u>2.25 inches</u> of rainfall in a period of 24 hr. = .093 inches per hour. Using a safely factor of 4 = .375 inches of rainfall will be used for the proposes of sizing a holding tank 767.6 GPH =

12.7 gpm

Summary:

Northern west coastal region of Alaska is an arid area. The coastal area including offshore annual average total precipitation is 6.7 inches, which was recorded for a period of 14 yrs. Most of the rain falls between June and October., with August being the rainiest month at 1.14 inches. It would be safe to say that 0.375 in per/hr of rainfall would be the worst case for any accumulation of rain falling on the drilling deck of the Drilling Rig Discoverer.

This analysis encompasses the northern and western shoreline of Alaska coastal region from Prudhoe Bay to Point Hope and outward 300 nautical mile of Outer continental shelf.

Reference to: Chukchi Sea Planning Area: oil and gas lease sale 193 in the Chukchi Sea

Table 1
Community Climate Data

Community	Temperature Range	Average annual Precipitation	Normal annual Snow Cover
Point Hope	-49 to 78 ºF	10 inches	36 inches
Point Lay	-55 to 78 ºF	6.9 inches	21 inches
Wainwright	-56 to 80 ºF	5 inches	12 inches
Barrow	-56 to 80 ºF	5 inches	20 inches

Sources:

- · Alaska Department of Commerce, Community Online Database.
- Environmental Impact statement OCS EIS/EA MMA 2006 -. 060.
- U.S. Department of the Interior Minerals Management Service, Alaska OCS Region.
- Temperature Anomalies and Features of Weather in Russia and in the Northern Hemisphere in 2012.